

The nexus between drivers of wetland utilisation patterns, land use/land cover change and ecosystem services in two wetlands, Zimbabwe

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Abstract

The study assesses the nexus between the drivers of wetland utilisation patterns, land-use and land-cover change (LULCC) and the current status of provisioning and cultural services in Driefontein and Intunjambili wetlands, Zimbabwe. A total of 280 household questionnaires were administered together with semi-structured interviews conducted with key informants in the two wetlands. Qualitative data were analysed using the content analysis method whereas descriptive and inferential statistics were used for quantitative data. LULCC was assessed using Landsat and Sentinel data for the years 1999, 2009 and 2019. Supervised classification was performed using the Maximum Likelihood Classification (MLC) algorithm in ArcMap 10.5. Eighty-six percent of Driefontein and 75% of Intunjambili households indicated that wetland use for horticulture farming was the predominant activity, but for different reasons in the two areas. In Intunjambili wetland, horticultural farming was mainly for subsistence use due to the prevailing semi-arid conditions. This was different from Driefontein, where market availability for horticultural produce was the major factor behind commercialised wetland use. Results of the LULCC analysis showed an increase in the spatial extent of the cultivated area in the two wetland areas, at the expense of vegetation and water and some of the associated ecosystem services. The studied wetlands provide cultural services since they are used as sites for research and academic excursions. The variations in the anthropogenic drivers of wetland use in Driefontein and Intunjambili show that location-specific wetland studies are important to inform appropriate wetland scale utilisation and management policies and strategies that result in the maintenance of ecosystem services.